

WHAT IS CLAIMED IS:

1. An apparatus for displaying a television video signal in a mobile terminal, comprising:

5 input means for generating a plurality of signals for control of a television mode of said mobile terminal;

control means responsive to said control signals from said input means for generating a plurality of commands for execution of said television mode and user data to be displayed when said television mode is executed;

10 a tuner for receiving a television signal of a selected channel;

10 a decoder for decoding the television signal received by said tuner to separate it into said television video signal, an audio signal and synchronous signals;

15 video processing means for, in said television mode, converting said video signal from said decoder into digital video data, processing and storing the converted digital video data on a frame basis, outputting stored video data of a previous frame in a frame period and then outputting said user data; and

display means having a video data display area and a user data display area, said display means displaying said frame video data and user data from said video processing means respectively in said video data display area and user data display area.

20 2. The apparatus as set forth in claim 1, wherein said video processing means includes:

 a first memory for storing said user data;
 second and third memories for storing said television video data on a frame basis; and

a memory controller for storing received video data of a current frame in said second or third memory, outputting the video data of the previous frame stored in said third or second memory and then outputting said user data stored in said first memory upon completing the output of said video data of said previous frame.

5 3. The apparatus as set forth in claim 2, wherein said user data stored in said first memory includes information about a current time, information about a currently displayed channel, and menu associated soft key information.

10 4. The apparatus as set forth in claim 2, wherein said video processing means further includes a format scaler for scaling a size of said video signal from said decoder to that displayable by said display means.

5. The apparatus as set forth in claim 2, wherein said video processing means further includes an on-screen display (OSD) controller for designating, copying and displaying a desired area of said user data stored in said first memory.

6. The apparatus as set forth in claim 2, wherein:
15 said memory controller is adapted to output video data of a frame being displayed on said display means as a still picture in response to a capture key input; and

 said control means is adapted to access said video data being output as said still picture.

20 7. The apparatus as set forth in claim 2, wherein said memory controller is adapted to rotate and output a picture being displayed on said display means in

response to a rotate key input.

8. The apparatus as set forth in claim 7, wherein said memory controller is adapted to scale up and output said rotated and output picture.

9. A video processing apparatus for processing a television video signal in 5 a mobile terminal with a tuner and a television decoder, comprising:

an analog/digital (A/D) converter for converting an output video signal from said decoder into digital video data;

a format scaler for scaling a size of said video data to a frame size synchronously with synchronous signals from said decoder;

10 a first memory for storing user data from a control unit of said mobile terminal;

second and third memories for storing said video data on a frame basis; and

a memory controller for storing video data of a current frame from said format scaler in said second memory at the same time as outputting video data of

15 a previous frame stored in said third memory, and outputting said user data stored in said first memory upon completing the output of said video data of said previous frame.

10. The video processing apparatus as set forth in claim 9, further comprising an on-screen display (OSD) controller for designating, copying and

20 displaying a desired area of said user data stored in said first memory.

11. The video processing apparatus as set forth in claim 9, further comprising an Inter Integrated Circuit (I2C) bus interface controller for transferring

channel control data from said control unit to said tuner in an I2C communication manner.

12. A method for displaying a television video signal in a mobile terminal with a display unit, said display unit having a video data display area and a user data display area, said method comprising the steps of:

5 a) in a television mode, controlling a tuner to select a desired channel;
b) receiving a television video signal of the selected channel and converting the received video signal into digital video data;

10 c) scaling a size of said video data to a frame size; and
d) storing video data of a current frame received over said selected channel and user data corresponding to said selected channel in a memory, outputting video data of a previous frame stored in said memory to said video data display area of said display unit in a frame period and then outputting said user data stored in said memory to said user data display area of said display unit upon completing the 15 output of said video data of said previous frame.

13. The method as set forth in claim 12, wherein said step d) includes the step of, in response to a copy command, copying a desired area of said user data stored in said memory and displaying the copied data area in said video data display area.

20 14. The method as set forth in claim 12, wherein said step d) includes the step of, in response to a rotation command, rotating and scaling up a currently displayed picture and displaying the resulting picture on said display unit at a full screen size.

15. The method as set forth in claim 14, wherein the rotation is made by 90° or substantially 90°.

16. A method for displaying a television video signal in a mobile terminal with a display unit, said display unit having a video data display area and a user data display area, said method comprising the steps of:

- a) in a television mode, controlling a tuner to select a desired channel;
- b) receiving a television video signal of the selected channel and converting the received video signal into digital video data;
- c) scaling a size of said video data to a frame size;
- 10 d) storing video data of a current frame received over said selected channel and user data corresponding to said selected channel in a memory, outputting video data of a previous frame stored in said memory to said video data display area of said display unit in a frame period and then outputting said user data stored in said memory to said user data display area of said display unit upon completing the 15 output of said video data of said previous frame; and
- e) in response to a screen capture command, outputting a currently displayed picture as a still picture, outputting said still picture to a control unit of said mobile terminal to store it, and then returning to said step d).

17. A method for displaying a television video signal in a mobile terminal 20 with a display unit, said display unit having a video data display area and a user data display area, said method comprising the steps of:

- a) in a television mode, controlling a tuner to select a desired channel;
- b) receiving a television video signal of the selected channel and converting

the received video signal into digital video data;

- c) scaling a size of said video data to a frame size;
- d) storing video data of a current frame received over said selected channel and user data corresponding to said selected channel in a memory, outputting video data of a previous frame stored in said memory to said video data display area of said display unit in a frame period and then outputting said user data stored in said memory to said user data display area of said display unit upon completing the output of said video data of said previous frame; and
- e) in response to a screen adjustment command, rotating and scaling up a currently displayed picture and displaying the resulting picture on said display unit at a full screen size.

18. A method for displaying a television video signal in a mobile terminal with a display unit, said display unit having a video data display area and a user data display area, said method comprising the steps of:

- 15 a) displaying menus including a television mode in response to a menu selection;
- b) in response to selection of said television mode, controlling a tuner to select a desired channel;
- c) storing video data of a current frame received over the selected channel and user data corresponding to said selected channel in a memory, outputting video data of a previous frame stored in said memory to said video data display area of said display unit in a frame period and then outputting said user data stored in said memory to said user data display area of said display unit upon completing the output of said video data of said previous frame, said user data including menus of
- 20 said television mode;

- d) in response to selection of a screen capture menu, outputting a currently displayed picture as a still picture, outputting said still picture to a control unit of said mobile terminal to store it, and then returning to said step c);
 - e) in response to selection of a screen adjustment menu, rotating and scaling
- 5 up the currently displayed picture and displaying the resulting picture on said display unit at a full screen size and, in response to reselection of said screen adjustment menu, returning to said step c) to display the original picture; and
- f) in response to selection of an exit menu, exiting from said television mode and entering a communication mode.